

This listing of claims will replace all prior versions, and listings, of claims in the application:

1 1. (original) A communications method for use in a
2 communications system including a base station and a plurality
3 of wireless terminals, a different communications channel
4 existing between each wireless terminal in said plurality of
5 wireless terminals and said base station, the communications
6 channel existing between each particular wireless terminal and
7 the base station having a quality which is the channel quality
8 for the particular wireless terminal, the method comprising:
9 operating the base station to:
10 i) maintain a set of channel condition information
11 indicating the channel quality of each of said
12 plurality of wireless terminals;
13 ii) examine the set of channel condition information
14 to identify wireless terminals having channel
15 conditions which differ from one another by at least a
16 pre-selected minimum amount; and
17 iii) assign a communications channel segment to be
18 used to communicate superimposed signals corresponding
19 to at least two different wireless terminals
20 identified as having channel conditions which differ
21 by at least said pre-selected minimum amount.

1 2. (original) The communications method of claim 1,
2 wherein the maintained set of channel condition information
3 includes channel signal to noise ratio information;
4 wherein said at least two different wireless terminals
5 include a first and a second wireless terminal; and
6 wherein the minimum pre-selected amount by which the
7 channel conditions of the first and second wireless terminals
8 differ is 3 dB.

1 3. (original) The method of claim 1, further comprising:
2 operating the base station to repeat said steps of
3 maintaining, examining and assigning.

1 4. (original) The method of claim 1, further comprising:
2 operating the base station to repeat said steps of
3 maintaining and examining; and wherein when said examining
4 step fails to identify at least two wireless terminals having
5 channel conditions which differ by the pre-selected minimum
6 amount having signals to be transmitted in a communications
7 channel segment which is available to be assigned, operating
8 said base station to:
9 assign the available communications channel segment to
10 a single one of said plurality of wireless terminals.

1 5. (currently amended) The communications method of claim 1,
2 wherein said at least two different wireless terminals
3 includes a first wireless terminal and a second wireless
4 terminal;
5 wherein said assigned communications channel segment is a
6 segment of a downlink channel;
7 wherein the first wireless terminal has a better channel
8 quality than said second wireless terminal, the method further
9 comprising:
10 operating the base station to transmit a first
11 superimposed signal to the first and second wireless
12 terminals in said assigned communication channel segment,
13 said first superimposed signal including a low power signal
14 portion intended for said first wireless terminal and a
15 high power signal portion intended for said second wireless
16 terminal, the ~~lower~~ low power signal portion being
17 transmitted by said base station with lower power than said
18 high power signal portion or having less coding protection
19 than said high power signal portion.

1 6. (original) The communications method of claim 5, wherein
2 said assigned communications channel segment is a segment of an
3 assignment channel used to communicate communications channel
4 segment assignments to wireless terminals.

1 7. (original) The communications method of claim 6, further
2 comprising:
3 operating said base station to:
4 receive a second superimposed signal from said first
5 and second wireless terminals, said received second
6 superimposed signal including first and second signal
7 portions transmitted by said first and second wireless
8 terminals, respectively, said first signal portion being
9 received by said base station at a higher power level than
10 said second signal portion.

1 8. (original) The communications method of claim 7, further
2 comprising:
3 operating said base station to:
4 decode said first signal portion;
5 subtract said first signal portion from said second
6 superimposed signal; and
7 decode said second signal portion.

1 9. (original) The communications method of claim 7, further
2 comprising:
3 operating the first wireless terminal to determine which
4 one of a plurality of received target power levels to use in
5 determining the transmission power to use to transmit said first
6 signal portion from said first superimposed signal transmitted
7 to said first and second wireless terminals in said segment of
8 an assignment channel.

1 10. (original) The communications method of claim 9, wherein
2 operating the first wireless terminal to determine which one of
3 a plurality of received target power levels to use includes:
4 determining whether the portion of the first superimposed
5 signal used to communicate uplink channel assignment information
6 to the first wireless terminal was transmitted as a low power
7 signal portion or a high power signal portion.

1 11. (original) A base station for use in a communications system
2 including a plurality of wireless terminals, a different
3 communications channel existing between each wireless terminal
4 in said plurality of wireless terminals and said base station,
5 the communications channel existing between each particular
6 wireless terminal and the base station having a quality which is
7 the channel quality for the particular wireless terminal, the
8 base station comprising:

9 a set of channel condition information indicating the
10 channel quality of each of said plurality of wireless terminals;
11 means for examining the set of channel condition
12 information to identify wireless terminals having channel
13 conditions which differ from one another by a pre-selected
14 minimum amount; and

15 means for assigning a communications channel segment to be
16 used to communicate superimposed signals corresponding to a
17 least two different wireless terminals identified as having
18 channel conditions which differ by at least said pre-selected
19 minimum amount.

1 12. (original) The base station of claim 11,
2 wherein said at least two different wireless terminals
3 includes a first and a second wireless terminal;
4 wherein the maintained set of channel condition information
5 includes channel signal to noise ratio information; and

6 wherein the minimum pre-selected amount by which the
7 channel conditions of a first and second wireless terminals
8 differ is 3 dB.

1 13. (original) The base station of claim 11, further comprising:
2 means for assigning an available communications channel
3 segment to a single one of said plurality of wireless terminals
4 when said examining means fails to identify at least two
5 wireless terminals having channel conditions which differ by the
6 pre-selected minimum amount which have signals to be transmitted
7 in the communications channel segment which is available to be
8 assigned.

1 14. (original) The communications method of claim 13, further
2 comprising:
3 a receiver for receiving a superimposed signal from said
4 first and second wireless terminals, said received superimposed
5 signal including first and second signal portions transmitted by
6 said first and second wireless terminals, respectively, said
7 first signal portion being received by said base station at a
8 higher power level than said second signal portion, said first
9 wireless terminal having a better channel condition than said
10 second wireless terminal.

1 15. (original) The base station of claim 14, further comprising:
2 a superposition decoder for decoding said first and second
3 signal portions of the received superimposed signal.

1 16. (original) The base station of claim 15, wherein said
2 superposition decoder includes:
3 a decoder device for decoding said first signal portion;
4 a subtracter for subtracting said first signal portion from
5 said superimposed signal to produce said second signal portion;
6 and

7 a second decoder device for decoding said second signal
8 portion.

1 17. (original) A communications method for use in a
2 communications system including a base station and a plurality
3 of wireless terminals, a different communications channel
4 existing between each wireless terminal in said plurality of
5 wireless terminals and said base station, the communications
6 channel existing between each particular wireless terminal and
7 the base station having a quality which is the channel quality
8 for the particular wireless terminal, the method comprising:
9 operating a first wireless terminal having a first channel
10 quality to transmit a first portion of a superimposed
11 communications signal to said base station; and
12 operating a second wireless terminal having a second
13 channel quality to transmit a second portion of said
14 superimposed communications signal to said base station, the
15 first and second channel qualities being different by at least a
16 first pre-selected amount, said first and second signal
17 portions combining in the air during transmission to the base
18 station to form said superimposed communications signal.

1 18. (currently amended) The communications method of claim 17,
2 wherein the at least a first minimum pre-selected amount by
3 which the channel quality of the first and second wireless
4 terminals differ is 3 dB.

1 19. (currently amended) The communications method of claim 1
2 17, further comprising:
3 operating the first and second wireless terminals to
4 receive, prior to transmission of said first and second
5 superimposed signal portions, a superimposed assignment signal
6 including a low power signal portion intended for said first
7 wireless terminal and a high power signal portion intended for

8 said second wireless terminal, the lower power signal portion
9 being transmitted by said base station with lower power than
10 said high power signal portion, said first wireless terminal
11 having a better channel quality than said second wireless
12 terminal, said superimposed assignment signal assigning an
13 uplink communications channel segment.

1 20. (original) The communications method of claim 19, wherein
2 the first and the second signal portions transmitted by said
3 first and second wireless terminals, respectively, are
4 transmitted with power levels that cause said first signal
5 portion to be received by said base station at a higher power
6 level than said second signal portion.

1 21. (original) The communications method of claim 20, further
2 comprising:
3 operating the first wireless terminal to determine which
4 one of a plurality of received target power levels to use in
5 determining the transmission power to use to transmit said first
6 signal portion from said superimposed assignment signal.

1 22. (original) The communications method of claim 21, wherein
2 operating the first wireless terminal to determine which one of
3 a plurality of received target power levels to use includes:
4 determining whether the superimposed signal portion used to
5 communicate uplink channel assignment information to the first
6 wireless terminal was transmitted as a low power signal portion
7 or a high power signal portion.

1 23. (original) A wireless terminal including:
2 a receiver for receiving a superimposed assignment signal
3 including a first signal portion and a second signal portion one
4 of said signal portions being intended for said wireless
5 terminals with the other one of said signal portions being

6 intended for another wireless terminal, the first signal portion
7 being received with at a lower power level than said second
8 signal portion;
9 a superposition decoder for decoding said first and second
10 signal portions;
11 means for determining from information included in one of
12 said first and second signal portions which portion is intended
13 for said wireless terminal; and
14 a transmitter for transmitting signals in uplink
15 communications channel segments to which received superimposed
16 assignment signals intended for said wireless terminal
17 correspond.

1 24. (original) The wireless terminal of claim 23, further
2 comprising:

3 stored received target level power information for a
4 plurality of different received power target levels; and
5 means for determining which one of the plurality of
6 received target power levels to use when transmitting a signal
7 in a particular uplink communications channel segment from a
8 received superimposed assignment signal corresponding to the
9 particular uplink communications channel segment.

1 25. (original) The wireless terminal of claim 24, wherein said
2 means for determining includes:

3 determines whether the superimposed signal portion used to
4 communicate uplink channel assignment information to the
5 wireless terminal was transmitted as a low power signal portion
6 or a high power signal portion.

1 26. (currently amended) A communications method for use in a
2 communications system including a base station and a plurality
3 of wireless terminals, a different communications channel
4 existing between each wireless terminal in said plurality of

5 wireless terminals and said base station, the communications
6 channel existing between each particular wireless terminal and
7 the base station having a quality which is the communications
8 channel quality for the particular wireless terminal, signals
9 transmitted from the wireless terminals to the base station
10 combining in the communications channel ~~during transmission~~
11 between, the method comprising:
12 operating the base station to:
13 assign an uplink communications channel segment to be
14 used simultaneously by a first and second device;
15 receive a composite signal from said uplink
16 communications channel segment, said composite signal
17 including a first signal transmitted by said first device
18 and a second signal transmitted by said second device; and
19 perform a superposition decoding operation on the
20 received composite signal to decode the first and second
21 signals included in said composite signal.

1 27. (original) The communications method of claim 26, wherein
2 operating the base station to assign an uplink communications
3 channel segment includes operating the base station to:
4 select based on communications channel quality information,
5 a first wireless terminal and a second wireless terminal, the
6 first and second wireless terminals having different wireless
7 terminal communications channel qualities, to share an uplink
8 traffic segment; and
9 wherein the method further comprises operating the base
10 station to:
11 transmit to the selected first and second wireless
12 terminals information indicating the assigned traffic
13 channel segment and which one of the first and second
14 wireless terminals should transmit signals to be received
15 by said base station at a higher power level.

1 28. (original) The method of claim 27, wherein the one of the
2 first and second wireless terminals having the better channel
3 conditions is to be received at the base station at the higher
4 power level, the method further comprising:
5 operating the first wireless terminal to transmit to the
6 base station in the assigned traffic channel segment a first
7 signal portion; and
8 operating the second wireless terminal to transmit to the
9 base station in the assigned traffic channel segment a second
10 signal portion, the first and second signal portions
11 superimposing during transmission to said base station.

1 29. (original) The method of claim 28, wherein the first
2 wireless terminal transmits the first signal portion using less
3 power than the power used by said second wireless terminal to
4 transmit said second signal portion but the first signal portion
5 is received by said base station with a power level that is
6 higher than the power level of the second signal portion
7 received by said base station.

1 30. (original) The method of claim 29,
2 wherein said at least two different wireless
3 terminals includes a first wireless terminal and a second
4 wireless terminal;
5 wherein said communications channel segment to be
6 assigned is a segment of a downlink channel;
7 wherein the first wireless terminal has a better
8 channel quality than said second wireless terminal; and
9 wherein the base station further comprises:
10 means for transmitting a superimposed signal to
11 the first and second wireless terminals in said
12 assigned communication channel segment, said
13 superimposed signal including a low power signal
14 portion intended for said first wireless terminal
15 and a high power signal portion intended for said
16 second wireless terminal, the lower power signal
17 portion being transmitted by said base station with
18 lower power than said high power signal portion.